

**RF & MICROWAVE TRANSISTORS**  
**VHF-UHF CLASS C WIDE BAND**

- FREQUENCY 130 TO 400MHz
- VOLTAGE 28V
- POWER OUT 2.5 TO 13.5W
- HIGH POWER GAIN
- HIGH EFFICIENCY
- CLASS C TRANSISTORS
- COMMON EMITTER



TO 60 (M137)

**ORDER CODE**

SD1050  
 SD1070  
 SD1075

**BRANDING**

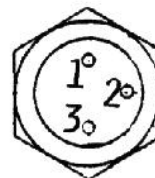
2N3375  
 2N3632  
 2N3733

**DESCRIPTION**

This line of silicon epitaxial NPN planar high frequency transistors employs a multi emitter electrode design. This feature together with a heavily diffused base matrix located between the individual emitters results in high RF current handling capability, high power gain, low base resistance and low output capacitance. These transistors are intended for Class A, B, or C amplifier, oscillator or frequency multiplier circuits and are specifically designed for operation in the VHF-UHF region.

| Device | Package |
|--------|---------|
| 2N3375 | TO 60   |
| 2N3632 | TO 60   |
| 2N3733 | TO 60   |

**PIN CONNECTION**



S882N3375-01

1 emitter  
 2 base

3 collector

# 2N3375/2N3632/2N3733

## ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ )

| Symbol       | Parameter                      | 2N3375      | 2N3632      | 2N3733      | Unit |
|--------------|--------------------------------|-------------|-------------|-------------|------|
| $V_{CBO}$    | Collector to Base Voltage      | 65          | 65          | 65          | V    |
| $V_{CEO}$    | Collector to Emitter Voltage   | 40          | 40          | 40          | V    |
| $V_{EBO}$    | Emitter to Base Voltage        | 4.0         | 4.0         | 4.0         | V    |
| $I_{C(max)}$ | Continuous Collector Current   | 1.5         | 3.0         | 3.0         | A    |
| $P_D$        | Total Dissipation at 25°C Stud | 11.6        | 23.0        | 23.0        | W    |
| $T_j$        | Junction Temperature           | 200         | 200         | 200         | °C   |
| $T_{stg}$    | Storage Temperature            | - 65 to 150 | - 65 to 150 | - 65 to 150 | °C   |

|               |                                  | 2N3375 | 2N3632 | 2N3733 |      |
|---------------|----------------------------------|--------|--------|--------|------|
| $R_{th(j-c)}$ | Junction-case Thermal Resistance | 15.0   | 7.6    | 7.6    | °C/W |

## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ )

### STATIC

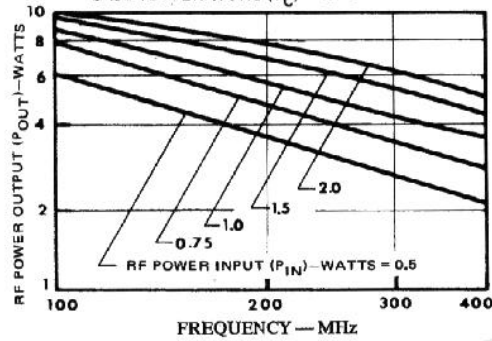
| Symbol     | Test Conditions             | 2N3375 |                   |      | 2N3632 |                |      | 2N3733 |      |      | Unit |
|------------|-----------------------------|--------|-------------------|------|--------|----------------|------|--------|------|------|------|
|            |                             | Min.   | Typ.              | Max. | Min.   | Typ.           | Max. | Min.   | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 0.5mA$ $V_{BE} = 0$  | 65     |                   |      | 65     |                |      | 65     |      |      | V    |
| $BV_{CEO}$ | $I_C = 200mA$ $I_B = 0$     | 40     |                   |      | 40     |                |      | 40     |      |      | V    |
| $BV_{EBO}$ | $I_E = 0.25mA$ $I_C = 0$    | 4      | ( $I_E = 0.1mA$ ) |      | 4      |                |      | 4      |      |      | V    |
| $I_{CEO}$  | $V_{CB} = 30V$ $I_E = 0$    |        |                   | 0.1  |        |                | 0.25 |        |      | 0.25 | mA   |
| $H_{FE}$   | $V_{CE} = 5V$ $I_C = 250mA$ | 10     |                   |      | 5      | ( $I_C = 1A$ ) |      | 10     |      |      |      |

### DYNAMIC

| Symbol   | Test Conditions                        | 2N3375 |      |      | 2N3632 |      |      | 2N3733 |      |      | Unit |
|----------|----------------------------------------|--------|------|------|--------|------|------|--------|------|------|------|
|          |                                        | Min.   | Typ. | Max. | Min.   | Typ. | Max. | Min.   | Typ. | Max. |      |
| $P_O$    | $F = 175MHz$ $V_{CE} = 28V$<br>Class C |        |      |      | 13.5   |      |      |        |      |      | W    |
| $P_O$    | $F = 400MHz$ $V_{CC} = 28V$            | 3      |      |      |        |      |      | 10     |      |      | W    |
| $G_P$    | $F = 175MHz$ $V_{CC} = 28V$            |        |      |      | 5.8    |      |      |        |      |      | dB   |
| $G_P$    | $F = 400MHz$ $V_{CC} = 28V$            | 4.8    |      |      |        |      |      | 4.0    |      |      | dB   |
| $\eta_C$ | $F = 175MHz$ $V_{CC} = 28V$            |        |      |      | 70     |      |      |        |      |      | %    |
| $\eta_C$ | $F = 400MHz$ $V_{CC} = 28V$            | 40     |      |      |        |      |      | 45     |      |      | %    |
| $C_{OB}$ | $F = 1MHz$ $V_{CB} = 30V$              |        |      | 10   |        |      | 20   |        |      | 20   | pF   |

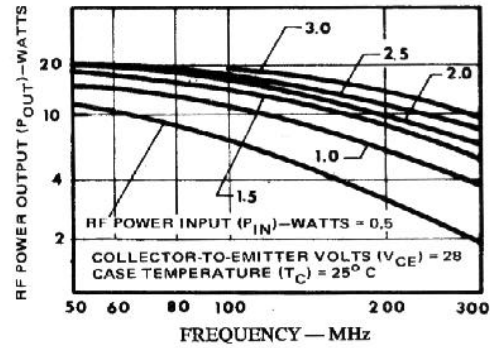
## APPLICATION INFORMATION (typical curves)

2N3375 POWER OUTPUT VS FREQUENCY

COLLECTOR-TO-EMITTER VOLTS ( $V_{CE}$ ) = 28  
CASE TEMPERATURE ( $T_C$ ) = 25°C

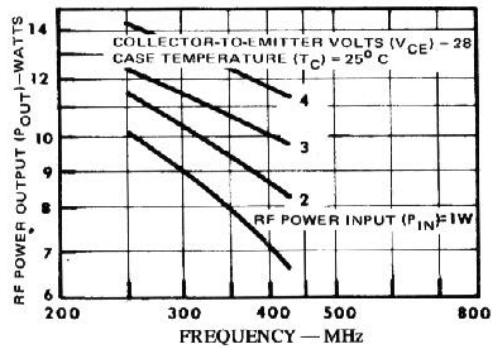
S882N3375-02

2N3632 POWER OUTPUT VS FREQUENCY



S882N3632-04

2N3733 POWER OUTPUT VS FREQUENCY

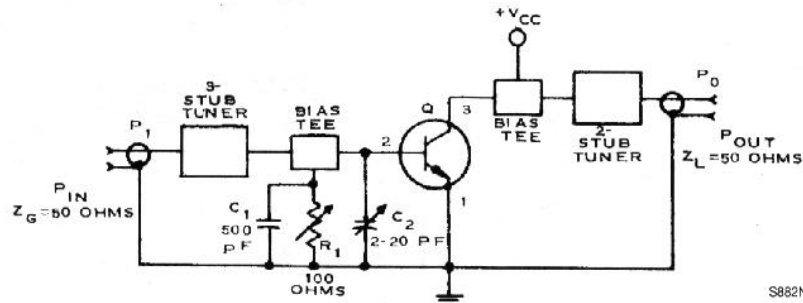
COLLECTOR-TO-EMITTER VOLTS ( $V_{CE}$ ) = 28  
CASE TEMPERATURE ( $T_C$ ) = 25°C

S882N3733-05

## 2N3375/2N3632/2N3733

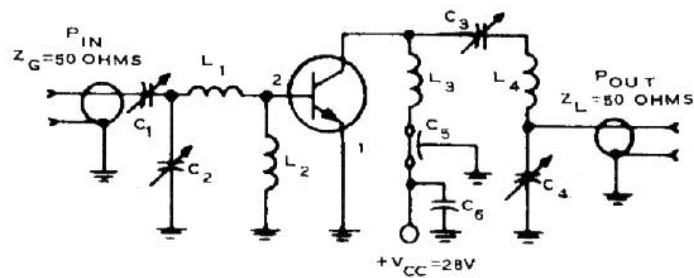
### TEST CIRCUITS

#### 2N3375 (400 MHz OPERATION)



S882N3375-02

#### 2N3632 (175MHz OPERATION)



S882N3632-02

#### 2N3632

$C_1, C_2, C_3, C_4: 7-100 \text{ pF}$

$C_5: 100 \text{ pF}$

$C_6: 0.01 \text{ F, disc ceramic}$

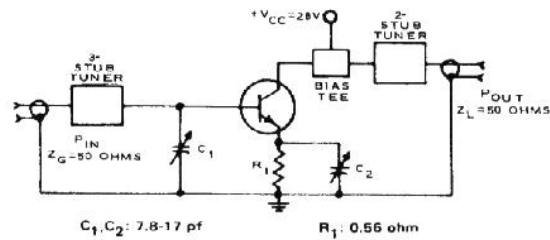
$L_1: 1.5 \text{ turns No. 16 wire, } 3/16" \text{ ID, } 5/16" \text{ long}$

$L_2: \text{Ferrite choke, } Z = 450$

$L_3: 1 \text{ turn No. 16 wire, } 1/4" \text{ ID, } 3/8" \text{ long}$

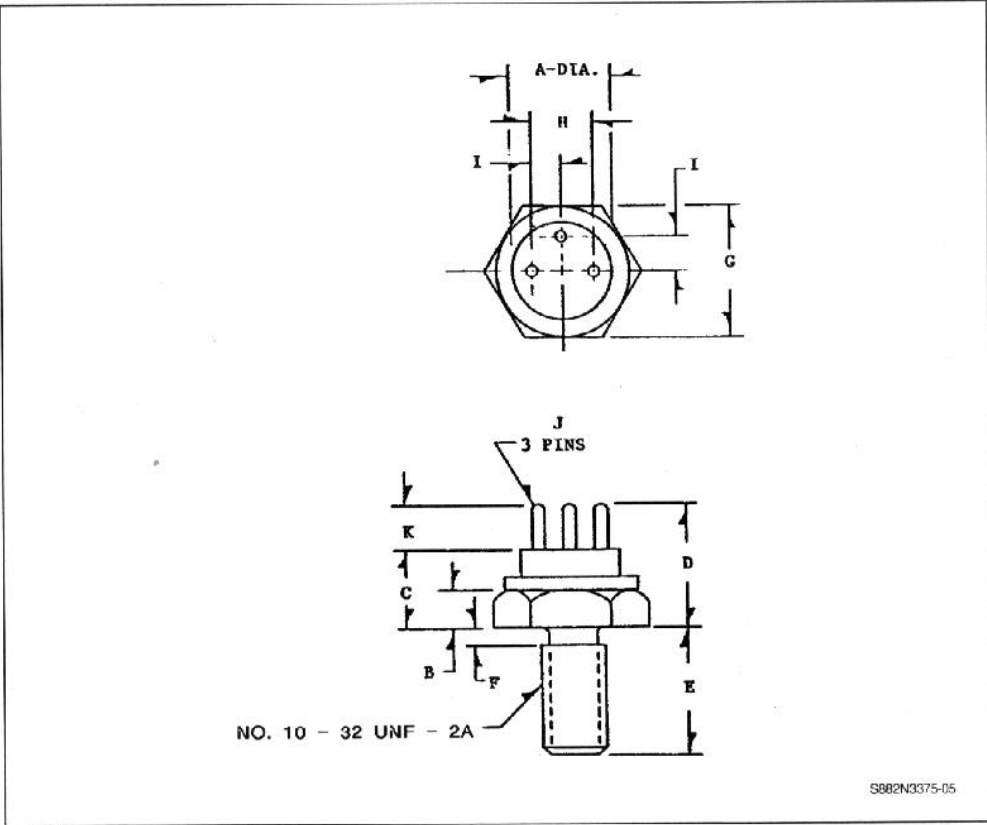
$L_4: 2 \text{ turns No. 16 wire, } 1/4" \text{ ID, } 1/4" \text{ long}$

#### 2N3733(400MHz OPERATION)



S882N3733-02

PACKAGE MECHANICAL DATA  
TO 60



|   | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| A | .320           | .340           |
| B | .110           | .135           |
| C | .245           | .300           |
| D | .400           | .450           |
| E | .420           | .455           |
| E | .140           | .160           |

|   | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| F |                | .078           |
| G | .420           | .440           |
| H | .190           | .210           |
| I | .095           | .105           |
| J | .030           | .048           |
| K | .140           | .160           |